

PATTERSON CREEK (RM 0.0–10.1), AUGUST 14–15, AUGUST 19–21, AND AUGUST 27, 2002

OVERVIEW:

Patterson Creek (Map 9) is a low gradient tributary to the Snoqualmie River that flows into the Snoqualmie at RM 30. Patterson Creek is prone to flooding, and has endured decades of dredging to control flooding and to drain the valley floor for development and agriculture. The watershed of Patterson Creek is currently experiencing a tremendous amount of development, particularly in the headwaters.

RM 0.0–1.9, SNOQUALMIE RIVER FLOODPLAIN

Reach Overview:

LWD: 12 pieces, 0 pools

Patterson Creek flows across the Snoqualmie River floodplain at its mouth and under SR 202 at RM 1.9. The creek was entrenched into a narrow and deep channel through this reach. The substrate was silty. The riparian vegetation was primarily reed canary grass and some invasive shrubs such as blackberry. Some localized reaches of the stream had a canopy of alder and willow. LWD was sparse.

RM 1.9–3.0, PATTERSON CREEK FLOODPLAIN

Reach Overview:

LWD: 0 pieces, 0 pools

Patterson Creek followed SR 202, flowing within 100 feet of the roadway throughout this reach. The creek was straight and deeply entrenched (Photo PA1). The substrate was predominantly silt with patches of gravel and pebble. The shallowest water was only 2.9 feet in depth; in other locations the water was too deep to measure. At RM 2.9 the flow was subsurface. The wetted width was approximately 10 feet, and the OHW was 24 feet wide.

There was a thin line of immature trees on the LB of this reach between the creek and SR 202, in some places as much as 20 feet away from the bank. These trees were 90% alder and 10% maple. Shrubs were reed canary grass and blackberry. In several places, the stream appeared to be choked by reed canary grass.

Water temperature was 12°C (53.6°F) on August 20, 2002. This temperature is within the range that is optimal for salmonid rearing (Bjornn and Reiser, 1991). Coho fry were observed at RM 2.3.

Site-Specific Observations:

There are road crossings at RM 2.2, 2.5, and 2.9 (Photo PA2). A culvert on the RB at the Duthie Hill Road crossing (RM 2.5) had water that was noted as “very cold, aches to walk in.” This was likely groundwater seeping into Patterson Creek.

RM 3.0–8.3, WETLAND VALLEY

Reach Overview:

LWD: 1 piece, 1 pool

Patterson Creek flowed through a low gradient valley wetland in this reach. Agriculture was predominant in this valley, but residential development pressure was intense in the upland areas.

The wetted width of the creek was 4–6 feet. The water depth varied from 6 inches to as much as 5 feet (Photo PA3). Silt dominated the substrate.

Invasive plants, especially reed canary grass and yellow iris (Photos PA4–PA5), were very dense in this reach of Patterson Creek. Some willows were observed, but very few native plants existed. LWD was absent. Nevertheless, coho fry were observed throughout the reach.

Site-Specific Observations:

Standing water was observed in the valley at RM 5.2. Homeowners on 276th Avenue NE informed the field technicians that the street floods frequently, and has been covered with as much as 14 feet of water.

There were six road crossings in this reach, at RM 4.2, 4.6, 5.0, 5.8 (Photo PA6), 6.5, and 6.9.

Beaver activity was noted at RM 5.2 and 8.2.

RM 8.3–10.1, RESIDENTIAL

Reach Overview:

LWD: 108 pieces, 1 pool

In this upper reach, Patterson Creek flowed through residential land with a gradient of 2–5%. Flow was subsurface at times (Photo PA7). Land development in this area had forced the creek through several culverts, some of them perched, as roads crossed the creek.

Coho fry were abundant in pockets of water at RM 8.9 and observed all the way upstream to RM 10.1. A few 4–5 inch trout were observed in deeper pockets of water. Raccoon and deer tracks, a large red-headed woodpecker, and crawfish were observed in this reach. Caddisflies observed here were very small; they may have been *Glossosoma* species or may have been early instar stages from larger species.

With the exception of occasional blocked culverts and some water withdrawal pumps, this reach was described as looking “very healthy and natural” (Photo PA8). LWD was abundant.

Channel width was 8–12 feet wide, and the substrate was gravel dominant and pebble subdominant. The creek was shaded with a canopy of maple, alder, and conifer. Shrubs were native, mostly salmonberry. The stream was somewhat entrenched, with bank slopes of 100% in places.

Site-Specific Observations:

Residents at a house at RM 8.6 explained that their driveway over Patterson Creek was washed out recently when the culvert underneath it plugged up. They had installed a temporary bridge and were waiting for the permits to install a permanent bridge (Photo PA9). A 60-foot-long blown-out culvert was resting in the creek at RM 9 (Photo PA10); the original location of this culvert was unclear. A perched culvert at RM 9.7 was a barrier to coho fry migration. A plunge pool at the downstream end of this culvert was 15 feet long and 9 feet wide. This was the only pool observed in this uppermost reach of Patterson Creek.

Map #9 Patterson Creek & Canyon Creek

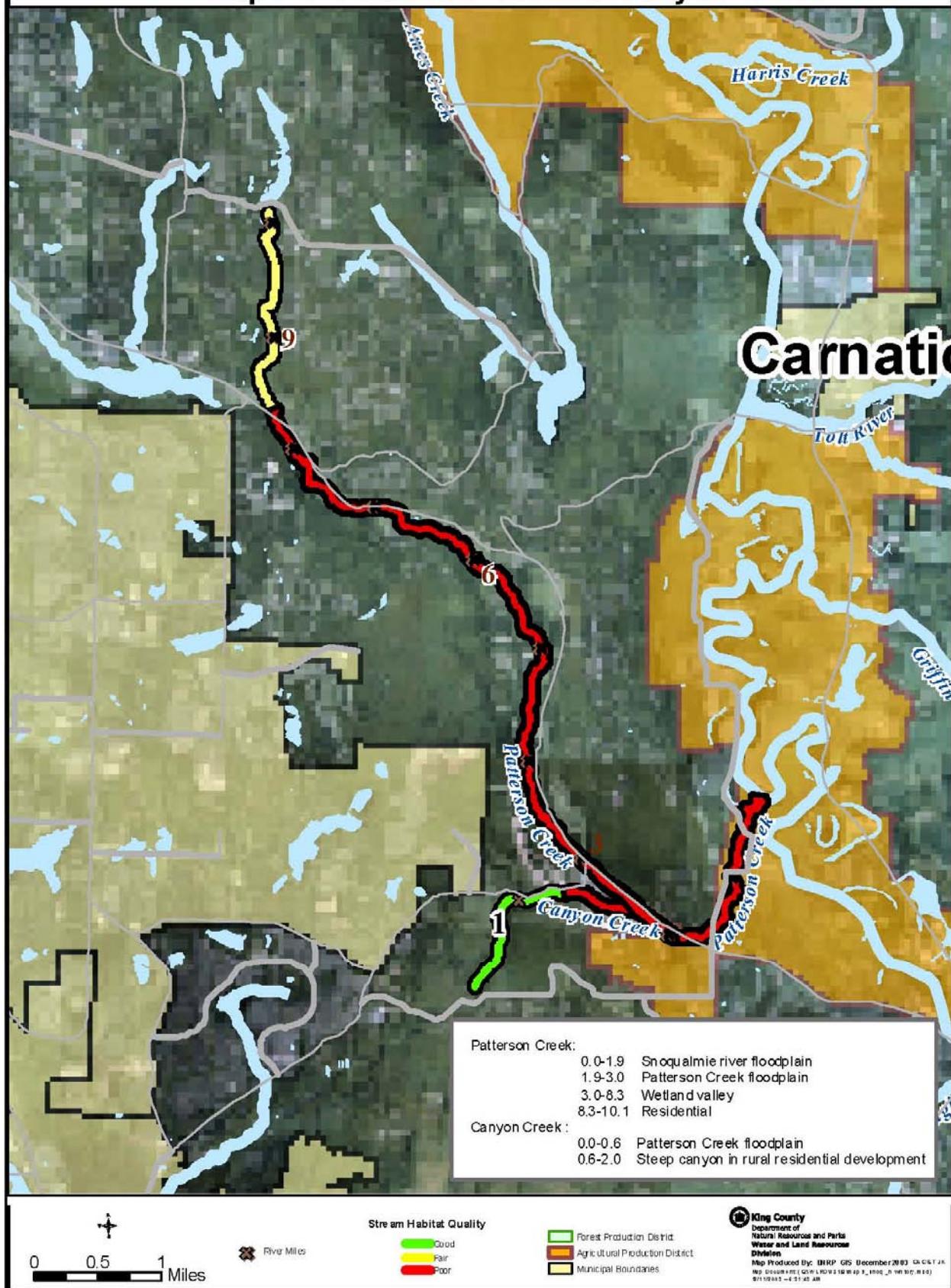




Photo PA1. Patterson Creek floodplain.



Photo PA2. Road crossing at RM 2.9.



Photo PA3. Reed canary grass dominates the Patterson Creek floodplain, RM 6.9.



Photo PA4. Invasive plants choke Patterson Creek at RM 6.9.



Photo PA5. Deep pool at RM 5.0.



Photo PA6. Road crossing at RM 5.8.



Photo PA7. Sub-surface flow at RM 8.9

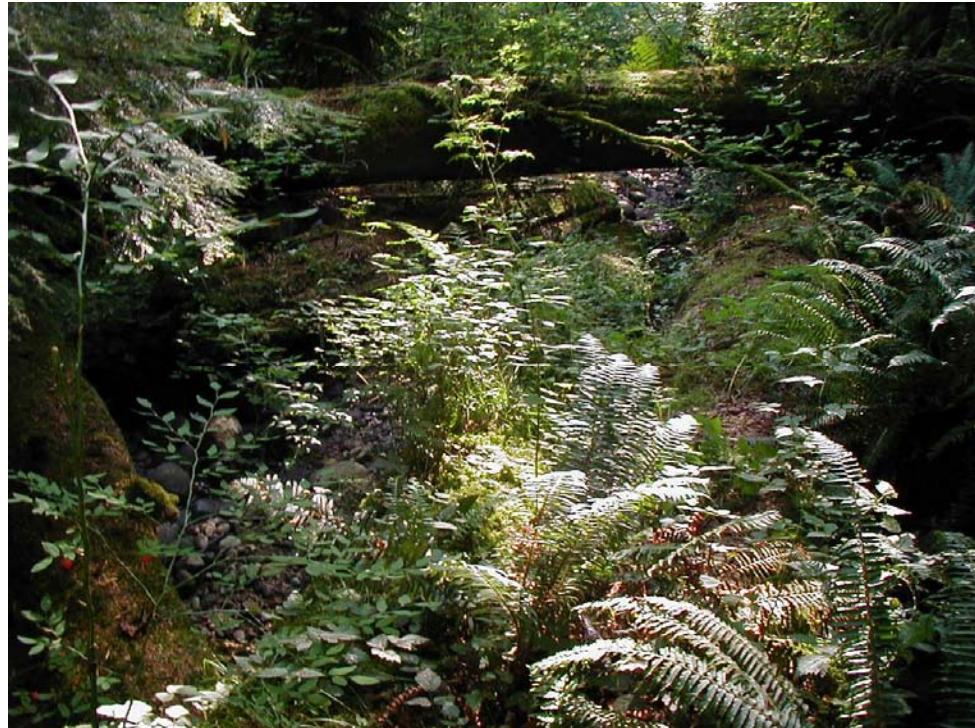


Photo PA8. Healthy riparian vegetation at RM 9.4.



Photo PA9. Temporary bridge over driveway at RM 8.6.



Photo PA10. Old culvert rotting in the creek, RM 9.4.

CANYON CREEK (RM 0.0–2.0), AUGUST 20–21, 2002

OVERVIEW:

Canyon Creek (Map 9) is a tributary to Patterson Creek, flowing into it from the Issaquah Plateau at Patterson's RM 2.4. Historically, coho salmon have spawned and reared in Canyon Creek. Many coho fry were observed during the stream walk. However, current development pressure in the watershed may be impacting Canyon Creek, especially in the lower reach.

RM 0.0–0.6, PATTERSON CREEK FLOODPLAIN

Reach Overview:

LWD: 1 piece, 2 pools

The streambed morphology in this lower reach was riffle/glide and the wetted width was 8–10 feet with a 24-foot OHW. Two deep pools were observed in this reach. The substrate was pebble and gravel of good quality for coho spawning (Photo CA1).

However, Patterson Creek's invasive weeds inundated Canyon Creek (Photo CA2). The riparian vegetation was exclusively reed canary grass and blackberry, except for some restoration plantings at RM 0.1. Because of the degraded riparian vegetation, the overall habitat quality was rated as poor (see Table 1 in the Conclusions Section).

Site-Specific Observations:

Canyon Creek flowed through a golf course between RM 0.2–0.6. A LB tributary that flows through the golf course at RM 0.2 was dry; an old redd was noted at RM 0.2. Bridges for golf carts crossed the stream at RM 0.2 and 0.3, and twice at RM 0.4. Fish ladders were observed at RM 0.4 and 0.5 (Photo PA3).

RM 0.6–2.0, STEEP CANYON IN RURAL RESIDENTIAL DEVELOPMENT

Reach Overview:

LWD: 182 pieces, 24 pools

Canyon Creek flowed through a steep canyon with abundant wildlife, coho fry, and trout. Reed canary grass was observed up to RM 0.7, but only in sparse quantities. The riparian shrubs through this reach were salmonberry, vine maple and devils club. The canopy was closed throughout this reach and was mostly alder with some maples. Overall, the riparian vegetation in this reach was excellent (Photo CA4).

Many old coho redds were observed. Cutthroat trout were observed in a couple of pools, and caddisflies were noted as occurring everywhere. Deer tracks were also ubiquitous.

The substrate was gravel dominated. The gradient through this reach was about 2%, with small reaches up to 5%. In the steeper reaches, the substrate included large boulders.

Site-Specific Observations:

Riprap along the LB at RM 0.8 was protecting an old logging road (Photo CA5). Bear tracks were observed on the RB at RM 1.3. The presence of a silt fence along the LB at RM 1.3 indicated that land development and/or logging activity were occurring in the basin (Photo CA6). Just upstream of the silt fence was a wooden footbridge (Photo CA7). Some stream braiding at RM 1.4 had built up gravel bars.

Some clay hardpan was noted in the RB at RM 1.5 and 1.7, indicating stream scour during high flow events. At RM 2.0, Canyon Creek flows under SE Issaquah-Fall City Road (Photo CA8). Many coho fry were observed in the pool under this culvert.



Photo CA1. Spawning gravel, RM 0.1.



Photo CA2. Reed canary grass in Canyon Creek, RM 0.1.



Photo CA3. Fish ladder at RM 0.4.



Photo CA4. Healthy riparian vegetation at RM 1.5.



Photo CA5. Rip rap at RM 0.8.



Photo CA6. Silt fence, RM 1.3.



Photo CA7. Foot bridge, RM 1.3.



Photo CA8. Culvert under SE Issaquah-Fall City Rd, RM 2.0.